21 October 1959

MEMORANDUM FOR: Office of Logistics/Procurement Division/Contract Branch

SUBJECT : Request for Initiation of Task 33 under Contract RD-26 with [redacted] 25X1

1. It is requested that your office take the appropriate action to establish Task 33 under Contract RD-26 with [redacted] 25X1
[redacted] 25X1
This task will cover a research program directed toward the investigation of a method for preparing a [redacted] 25X1
[redacted] under specialized service conditions. 25X1

2. Funds in the amount of $[redacted] are to be made available to the contractor for a seven months period of performance in accordance with the proposal attached hereto. Charges are to be made against Allotment Number [redacted].

3. Contract RD-26 is an Agency sterile contract. Task 33 should also be Agency sterile. Government interest may be shown. The item is classified Secret. Agency interest in all work and material under the contract and task is classified Secret and may be divulged only on a need-to-know basis to appropriate security approved personnel.

The Contracting Officer is requested to advise the contractor's representative in writing of these security classifications.

In the event there is any variation in classification during the preliminary phases of the work, further guidance will be provided by the project engineer, [redacted] Room 210, West Outbuilding, extension [redacted] 25X1
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[redacted] 25X1

Chief
TSS/Engineering Division

Attachments:
Proposal dtd 21 Oct 1959
TSS-913-87-1473-60

APPROVED FOR THE OBLIGATION OF FUNDS:

Research Director

RD/P/TSS/RD/MC

Distribution:
Orig & 1 - Addressee
1 - TSS/OC
1 - Comptroller
1 - TSS/FASB
1 - TSS/LB
1 - [redacted]
1 - TSS/ENB
1 - RD Chrono
1 - [redacted] 25X1
1 - RD-187

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In replying please address:

[redacted] 25X1

October 21, 1959

Dear Sir:

We are herewith submitting a proposed program of research directed toward the investigation of a method for preparing [redacted] 25X1 [redacted] under specialized service conditions. 25X1 This represents a revision of the proposed program which was described in our letter dated September 24, 1959.

Our proposal dated January 5, 1959, which led to our effort under Work Order No. VIII, Task Order No. 6C, outlined the basic problems inherent in the development of a method for this purpose and also described our recommended approach to the solution of these problems. On the basis of the research performed under this Work Order, it appears that the development of a method for this application is quite feasible. Several of the candidate molding materials studied showed considerable promise in connection with this application, and are considered to merit additional, more detailed investigation. The results of an exploratory study of techniques for [redacted] were also generally 25X1 favorable; it is believed that this aspect of the over-all problem would require more additional effort than the materials aspect. The technique which currently appears to be the most promising involves a small, thin-walled

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[redacted] 25X1

Your technical representative has suggested that we consider performing additional effort in connection with this problem. A proposed program of research directed toward achieving the above-described objective is presented in the following.

Proposed General Method of Procedure

The development of a satisfactory method, as currently visualized, depends on the use of a proper molding material, a suitable flexible tube for holding the molding material, [redacted] 25X1

[redacted] 25X1 As currently contemplated, the major emphasis in the proposed program would be placed on an effort directed toward the development of a method of applying an appropriate material. This research would be concerned with a joint study of the preparation of appropriate thin flexible tubes and of the development of a suitable experimental applicator or injecting device. Thus, a further investigation would be made of techniques for preparing thin flexible tubes, free from pinholes, that would have suitable dimensions and also a relatively

[redacted] 25X1

[redacted] 25X1 Also, efforts would be directed toward the development of an experimental hypodermic-syringe-type device for use in inserting the tube, and subsequently in forcing the molding material into the tube and in maintaining pressure on the material until it hardened. Of course, such an experimental device should be relatively small, lightweight, and inexpensive.

It is currently planned that the effort under the proposed program would be initiated with the performance of two types of activity. One would be concerned with an investigation of the design and methods of preparing experimental flexible tubes with suitable dimensions and configuration; and with a further study of selected characteristics of promising molding materials. The other would involve the design and preparation of a tool, a pressurizing assembly, for use in injecting the various molding materials into the flexible tube and in holding them under pressure until hardening occurs. This pressurizing assembly should not be confused with the experimental applicator, which will be discussed later. As currently visualized, the pressurizing assembly would be crude and probably relatively awkward to operate; but, it would be comparatively inexpensive and would facilitate the detailed evaluation of the effectiveness of the various molding compounds and different flexible-tube materials and designs.

[redacted]

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It is likely that the various experimental flexible tubes would be prepared by manual dipping. However, during the course of the proposed program, consideration would be given to the probable need for a method of preparation of such tubes in relatively large numbers and at a comparatively small cost. If, as expected, the results of the proposed research are favorable, it is expected that the preparation of such tubes by molding would constitute a practical method.

With regard to the molding material, it currently appears that three materials show particular promise; these are a polyester foaming plastic, an epoxide-plastic system, and a low-melting-temperature metal alloy. In the earlier stages of the proposed program, a minor effort would be expended to define more specifically the effect of composition on setting-up or hardening time, within the anticipated time range of interest. It is already known that the setting-up time of such materials can be adjusted to fall within the range of a relatively few seconds to hours. Also, additional pertinent parameters would be investigated to some extent.

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[redacted] 25X1

On the basis of the information obtained, adjustments would be made on the materials of interest, in the course of the below-described evaluation of the experimental applicator. Ultimately, a selection would be made, on the basis of mutual agreement, as to the material or materials considered most promising for further evaluation in the field by your technical representatives.

While the above-described research was being conducted on experimental flexible tubes and on promising molding materials, an effort would be directed toward the development of a suitable experimental applicator.

There is a possibility that a metal syringe which is presently available commercially, and is used by the dental trade, could be modified for the application of interest. If this were not satisfactory, then consideration would be given to the design of a suitable experimental applicator. In this connection, one possible preliminary design which has been conceived for such a device is shown in Figure 1.

This preliminary design incorporates two features which are considered to be particularly important; it provides for the expulsion of air as the flexible tube is loaded with the molding material, and also for the maintenance of pressure on the injected material until hardening occurs. As currently envisioned, this type of experimental device might operate as follows:

The molding material would be loaded into the chamber of the experimental applicator and then forced into the metal tube by means of the plunger. [redacted] 25X1

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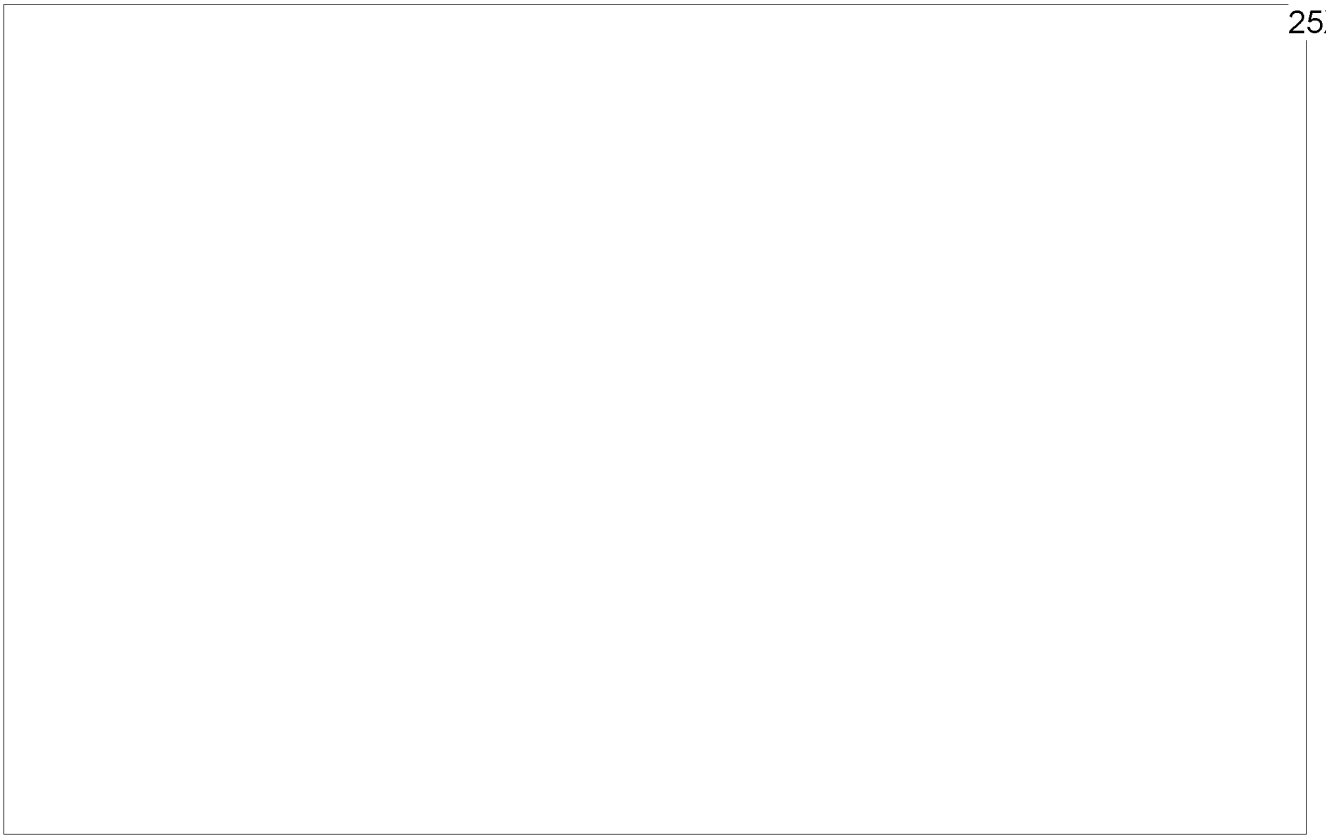

A suitable design for this type of experimental device should permit the unit to be dismantled for cleaning. Thus, as shown in Figure 1, provision could be made for unscrewing the front end of the unit from the body. This type of arrangement would also permit changing the size of the metal tube used, so that the experimental applicator could be utilized for

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The preliminary design illustrated in Figure 1 is for an experimental single-barrelled or a one-compartment applicator, which would be useful if the molding material selected for application represented a single-component material, or two or more materials which could be mixed before being loaded into the experimental applicator. However, it is possible that a molding material with characteristics which are mutually considered to be most satisfactory might be of the type which would involve mixing two

components just prior to the time that injection occurred. In that case, consideration would be given to the design of an experimental applicator which would effectively be a double-barrelled or two-compartment device.

Every effort would be made to evolve a design which would incorporate, to the extent possible, the desirable features recognized at the present time, plus any which might appear to be worth while on the basis of the experience gained in the course of performing the above-described research. A detailed layout of the experimental applicator would be prepared, and a meeting would be held with your technical representatives in order to discuss the design and to reach a mutual agreement as to a suitable design. It is expected that this meeting would take place about six weeks after the start of the proposed research period.

Subsequently, working drawings would be prepared, and the parts of an experimental unit would be prepared and assembled. It is currently expected that most of the above-described effort on the flexible tube and on the molding materials would have been concluded by the time that the experimental applicator was assembled. Accordingly, the most promising molding compound and flexible tubes based on the most satisfactory design would be selected, and experiments would be conducted with these and the experimental applicator. It is estimated that this evaluation effort would probably begin about three to four months after the start of the proposed research period.

These experiments would consist essentially of injecting selected [redacted] as described above, and evaluating the effectiveness of the general procedure. When the procedure and general

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operation were mutually judged to be satisfactory, attention would be directed pointedly toward the ease of operation and the ease of maintenance of the experimental applicator. It is expected that about two months of effort would be expended in a series of evaluations and subsequent modifications, and also in making minor adjustments to the flexible-tube design and to the composition of the molding material, in an attempt to evolve an over-all procedure which would be effective, reliable, and simple. Of course, during the performance of this research, the over-all procedure and the associated experimental material and devices would be discussed with and demonstrated to your technical representative.

At the conclusion of this period of evaluation and modification, up to three additional experimental applicators would be prepared, if possible within the limits of the time and funds provided. Then, the experimental applicator(s) along with a reasonable quantity of molding compound and of flexible tubes would be transmitted to your technical representative for further evaluation.

Reports and Liaison

Informal monthly letter reports would be submitted that described the progress of the proposed research. These would be supplemented by discussions with your technical representatives during their periodic visits and via telephone. At the end of the proposed research period, a summary report would be submitted that described the results of the research.

Duration and Estimated Costs

It is proposed that the contract provide for a seven-month period of research, with an estimated appropriation of $20,820, including the fixed fee. A general breakdown of the estimated costs is attached.

The Contract

The proposed contract would be a period-basis research agreement, consistent with our current contractual arrangements and providing only for a fixed period of research leading toward the objective outlined above.

If any additional information is needed, please let us know. Any inquiries of a contractual nature may be directed to [redacted] at Extension 159. 25X1

Yours very truly,

[redacted] 25X1

RRS:th

In Duplicate

Proposal of [redacted] to the U. S. Government. 25X1

For Research on A Further Investigation of the Development of a Specialized Method for Preparing [redacted] 25X1

Based upon a period-basis Contract for a research period of seven months.

(Including time for submission of all reports. The proposed contract will not provide for earlier conclusion of the research.)

ESTIMATED COSTS

We expect that the cost of this research for the period indicated above may be distributed approximately as set forth hereon, subject to the understanding that this allocation is merely an estimate, and actual costs incurred may vary from the categories shown. We have determined that these estimates are reasonable and consistent with [redacted] established policies in its research for the various Government agencies, which policies are briefly discussed below and will be followed in determination of our actual costs hereunder. 25X1

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Materials & Supplies, etc.

(Including any equipment which may be purchased as necessary in performance of the research. Charges of $25 or less are excluded from this item.)

Use of Equipment and Technical Services, Travel, and Misc.

(Including applicable costs of technical research and service divisions, and use of technical equipment, except that any undistributed balances of these accounts will be included in overhead. Cost of travel includes reasonable actual subsistence expenses and the actual cost of transportation. An allowance of up to 8¢ per mile for all necessary travel by privately owned conveyance is included in lieu of the cost of such travel.)

Salaries & Wages

(Including our predetermined accrual for vacation, holiday, and sick-leave pay, pensions, and social security.)

Type of Employee	*No. of Man-Months*	*Estimated Cost*
Supervision	1	
Research Engineers	8	
Lab. Assistants	6	
Steno., Clerical, Shop & Photo., etc.	1-1/2	
Total Salaries & Wages		[redacted]

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Overhead

59 per cent of salaries and wages, as they are defined above. Provisional monthly reimbursement will be at the rate of 59 per cent of salaries and wages, as so defined, or at such other provisional rate as may from time to time be mutually agreed upon with the Government's audit representatives. This is a provisional rate for current reimbursement, which we have arrived at by negotiation with Government representatives, and it will be subject to retroactive revision to the "actual" rate agreed upon with them for each calendar year following a detailed audit for that year. The item of overhead includes general research, charges of $25 or less for materials and supplies, and other categories of costs we customarily include in our overhead account. Cash discounts on all purchases will be credited to overhead, instead of to the amount of the purchase. Scrap of appreciable value will be credited directly to the project. All other scrap will be credited to the overhead account, in which the Government participates.)

Total Estimated Cost	[redacted]
Fixed Fee	
Contract Price	$20,820

*Please let us have your acceptance in our hands by December 4, 1959. Unless we extend the time, your acceptance after that date will be subject to agreement.

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